

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (currently amended) A high pressure mercury lamp comprising a luminous bulb in which at least mercury is enclosed inside the bulb, and a pair of sealing portions that retain airtightness of the luminous bulb,

wherein at least one of the sealing portions has a first glass portion extending from the luminous bulb and a second glass portion provided in at least a portion inside the first glass portion, and the at least one of the sealing portions has a portion to which a compressive stress is applied, and

a heating wire is provided at least ~~at part~~ in a portion of the luminous bulb and at least in a portion of each of the pair of sealing portions.

2. (original) The high pressure mercury lamp according to claim 1, wherein an amount of the enclosed mercury is 230 mg/cm^3 or more based on a volume of the luminous bulb.

3. (original) The high pressure mercury lamp according to claim 1, wherein an amount of the enclosed mercury is 300 mg/cm^3 or more based on a volume of the luminous bulb,

halogen is enclosed in the luminous bulb,

a bulb wall load of the high pressure mercury lamp is 80 W/cm^2 or more, and

the heating wire is means for heating the luminous bulb.

4. (original) The high pressure mercury lamp according to claim 1, wherein the heating wire is wound around at least one of the sealing portions.

5. (original) The high pressure mercury lamp according to claim 1, wherein external lead wires are extending from end portions of the pair of sealing portions, and

one end of the heating wire is electrically connected to at least one of the external lead wires.

6. (currently amended) The high pressure mercury lamp according to claim 5, wherein

a switch for turning on and off an electrical connection with the external lead ~~wire~~ wires ~~is provided in a portion of~~ is connected to the heating wire, and

the heating wire is electrically connected to the external lead ~~wire~~ wires before operation, and after operation, the electrical connection with the external lead ~~wire~~ wires is disconnected, and the heating wire is electrically connected to a power source for supplying current to the heating wire.

7. (currently amended) The high pressure mercury lamp according to claim 1, wherein

a pair of electrode rods are opposed to each other in the luminous bulb,

at least one of the pair of electrode rods is connected to a metal foil, and

the metal foil is provided in each of the sealing ~~portion~~ portions, and at least a portion of the metal foil is positioned in the second glass portion.

8. (currently amended) The high pressure mercury lamp according to claim 7, wherein

a coil having at least one metal selected from ~~the~~ a group consisting of Pt, Ir, Rh, Ru, and Re at least on its surface is wound around at least in a portion of the electrode rod that is buried in the at least one of the sealing portions.

9. (original) The high pressure mercury lamp according to claim 1, wherein a metal portion that is in contact with the second glass portion and supplies power is provided in the sealing portions,

the compressive stress is applied at least in a longitudinal direction of the sealing portions,

the first glass portion contains 99 wt% or more of SiO_2 , and

the second glass portion contains SiO_2 and at least one of 15 wt% or less of Al_2O_3 and 4 wt% or less of B.

10. (currently amended) A high pressure mercury lamp comprising a luminous bulb in which at least mercury is enclosed inside the bulb and a pair of electrode rods are opposed, and a pair of sealing portions extending from the luminous bulb, wherein

a coil having at least one metal selected from the a group consisting of Pt, Ir, Rh, Ru, and Re at least on its surface is wound around at least in a portion of the electrode rod that is buried in at least one of the sealing portions, and

a heating wire is provided at least ~~at part~~ in a portion of the luminous bulb and at least in a portion of each of the pair of sealing portions.

11. (currently amended) A high pressure mercury lamp comprising a luminous bulb in which at least mercury is enclosed inside the bulb, and a pair of sealing portions that retain airtightness of the luminous bulb, wherein

an amount of the enclosed mercury is 230 mg/cm^3 or more based on a volume of the luminous bulb, and

heating means for heating the luminous bulb is provided at least ~~at part~~ in a portion of the luminous bulb and at least in a portion of each of the pair of sealing portions.

12. (original) The high pressure mercury lamp according to claim 11, wherein the heating means is a heating wire,
an amount of the enclosed mercury is 300 mg/cm^3 or more based on a volume of the luminous bulb,

halogen is enclosed in the luminous bulb, and

a bulb wall load of the high pressure mercury lamp is 80 W/cm^2 or more.

13. (original) ~~The high pressure mercury lamp according to any one of claims 1, 10 and 11,~~ A high pressure mercury lamp comprising a luminous bulb in which at

least mercury is enclosed inside the bulb, and a pair of sealing portions that retain airtightness of the luminous bulb,

wherein at least one of the sealing portions has a first glass portion extending from the luminous bulb and a second glass portion provided in at least a portion inside the first glass portion, and the at least one of the sealing portions has a portion to which a compressive stress is applied, and

a heating wire is provided at least in a portion of the luminous bulb and at least in a portion of each of the pair of sealing portions;

wherein the high pressure mercury lamp comprising a luminous bulb in which at least mercury is enclosed inside the bulb and a pair of electrode rods are opposed, and a pair of sealing portions extending from the luminous bulb, wherein

a coil having at least one metal selected from a group consisting of Pt, Ir, Rh, Ru, and Re at least on its surface is wound around at least in a portion of the electrode rod that is buried in at least one of the sealing portions, and

a heating wire is provided at least in a portion of the luminous bulb and at least in a portion of each of the pair of sealing portions;

wherein the high pressure mercury lamp comprising a luminous bulb in which at least mercury is enclosed inside the bulb, and a pair of sealing portions that retain airtightness of the luminous bulb, wherein

an amount of the enclosed mercury is 230 mg/cm^3 or more based on a volume of the luminous bulb, and

heating means for heating the luminous bulb is provided at least in a portion of the luminous bulb and at least in a portion of each of the pair of sealing portions;

further comprising means for measuring a temperature of the luminous bulb.

14. (original) The high pressure mercury lamp according to claim 13, wherein the means for measuring the temperature is a thermocouple.

15. (original) The high pressure mercury lamp according to claim 11, wherein the heating means is configured so as to heat the luminous bulb at the same time as operation is started or after operation is started.

16. (currently amended) A lamp unit comprising a high pressure mercury lamp and a reflecting mirror for reflecting light emitted from the high pressure mercury lamp,

the high pressure mercury lamp comprising a luminous bulb in which at least mercury is enclosed inside the bulb, and a pair of sealing portions that retain airtightness of the luminous bulb,

wherein at least one of the sealing portions has a first glass portion extending from the luminous bulb and a second glass portion provided in at least a portion inside the first glass portion, and the at least one of the sealing portions has a portion to which a compressive stress is applied, and

a heating wire is provided at least ~~at part~~ in a portion of the luminous bulb and at least in a portion of each of the pair of sealing portions.

17. (currently amended) A lamp unit comprising a high pressure mercury lamp and a reflecting mirror for reflecting light emitted from the high pressure mercury lamp,

the high pressure mercury lamp comprising a luminous bulb in which at least mercury is enclosed inside the bulb, and a pair of sealing portions that retain airtightness of the luminous bulb,

wherein at least one of the sealing portions has a first glass portion extending from the luminous bulb and a second glass portion provided in at least a portion inside the first glass portion, and the at least one of the sealing portions has a portion to which a compressive stress is applied, and

a heating wire is provided at least at a portion of the reflecting mirror.

18. (original) The lamp unit according to claim 16 or 17, wherein an amount of the enclosed mercury is 230 mg/cm^3 or more based on a volume of the luminous bulb.

19. (currently amended) A lamp unit comprising a high pressure mercury lamp and a reflecting mirror for reflecting light emitted from the high pressure mercury lamp,

the high pressure mercury lamp comprising a luminous bulb in which at least mercury is enclosed inside the bulb, and a pair of sealing portions that retain airtightness of the luminous bulb,

wherein an amount of the enclosed mercury is 230 mg/cm^3 or more based on a volume of the luminous bulb, and

heating means for heating the luminous bulb is provided at least ~~at part~~ in a portion of the luminous bulb and at least in a portion of each of the pair of sealing portions.

20. (original) The lamp unit according to claim 16 or 17, wherein
an amount of the enclosed mercury is 300 mg/cm^3 or more based on a volume of
the luminous bulb,
halogen is enclosed in the luminous bulb, and
a bulb wall load of the high pressure mercury lamp is 80 W/cm^2 or more.

21. (original) ~~The lamp unit according to any one of claims 16, 17 and 19, A~~
lamp unit comprising a high pressure mercury lamp and a reflecting mirror for reflecting
light emitted from the high pressure mercury lamp,

the high pressure mercury lamp comprising a luminous bulb in which at least
mercury is enclosed inside the bulb, and a pair of sealing portions that retain
airtightness of the luminous bulb,

wherein at least one of the sealing portions has a first glass portion extending
from the luminous bulb and a second glass portion provided in at least a portion inside
the first glass portion, and the at least one of the sealing portions has a portion to which
a compressive stress is applied, and

a heating wire is provided at least in a portion of the luminous bulb and at least in
a portion of each of the pair of sealing portions;

wherein the lamp unit comprising a high pressure mercury lamp and a reflecting
mirror for reflecting light emitted from the high pressure mercury lamp,

the high pressure mercury lamp comprising a luminous bulb in which at least
mercury is enclosed inside the bulb, and a pair of sealing portions that retain
airtightness of the luminous bulb,

wherein at least one of the sealing portions has a first glass portion extending from the luminous bulb and a second glass portion provided in at least a portion inside the first glass portion, and the at least one of the sealing portions has a portion to which a compressive stress is applied, and

a heating wire is provided at least at a portion of the reflecting mirror;

wherein the lamp unit comprising a high pressure mercury lamp and a reflecting mirror for reflecting light emitted from the high pressure mercury lamp,

the high pressure mercury lamp comprising a luminous bulb in which at least mercury is enclosed inside the bulb, and a pair of sealing portions that retain airtightness of the luminous bulb,

wherein an amount of the enclosed mercury is 230 mg/cm^3 or more based on a volume of the luminous bulb, and

heating means for heating the luminous bulb is provided at least in a portion of the luminous bulb and at least in a portion of each of the pair of sealing portions;

further comprising means for measuring a temperature of the luminous bulb.

22. (original) The lamp unit according to claim 19, wherein
- the heating means is a heating wire, and
- the heating wire serves as a trigger wire.